# FAMILY LYCEUM.

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## FAMILY LYCEUM.

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## EVENING ENTERTAINMENTS.

ELEVENTH EVENING.

*Gustavus.*—THESE Pampas Indians are a strange set of people. I hardly know which is the greater savage, the Guacho or the Indian. Captain Head's journey across the Pampas must have been a very adventurous one.

*Mr. Oakley.*—Indeed it was; and not less so was his passage of the Andes. Take for example his account of the somerset of one of the mules belonging to his guides.

As the Captain and his party were ascending a ravine, the road became more and more wild, and the rocks more and more steep and rugged. At one place an immense mass of porphyry had the appearance of a castle of giant mould, and so strong was the likeness, that one of the Cornish miners declared, he 'could see an old woman coming across the drawbridge.'

The Captain generally contrived to keep a-head of his party; but after he had proceeded a little way from this castellated rock, the capataz rode up to him, and invited him to a reconnoisance of the 'Ladera de las Vacas,' the most difficult pass in the route, and one which, for some time after the opening of the Cordillera by the melting of the snow, is quite impracticable, though it becomes a little better as the summer advances. They trotted on, and the capataz reported the 'Ladera' passable; but the place and the passage cannot be so well described as in Captain Head's own nervous and graphic language.

'The mountain above,' says the Captain, 'appears almost perpendicular, and in one continued slope down to the torrent which is raging beneath. The surface is covered with loose earth and stones, that have been brought down by the water. The path goes across this slope, and is very bad for about seventy yards, being only a few inches broad; but the point of danger is a spot where the water which comes down from the top of the mountain, either washes the path away or covers it with loose stones.—We rode over it, and certainly it was very narrow and bad. In some places the rock almost touches one's shoulder, while the precipice is immediately under the opposite foot, and high above head are a number of large loose stones, which appear as if the slightest touch would send them rolling into the torrent beneath, which is foaming and rushing with great violence. However, the danger to the rider is only imaginary; for the mules are so very careful and seem so well aware of their situation, that there is no chance of their making a false step. As soon as we had crossed the pass, the capataz told me it was a very bad place for baggage mules: that four hundred had been lost there; and that we should also very probably lose one. He said that he would go down to the water, at a place about a hundred yards off, and wait there with his lasso, to catch any mule that might fall into the torrent, and he requested me to lead on his mule. However, I was resolved to see the tumble, if there should be one; so the capataz took away my mule and his own, and then scrambled down on foot till he got to the level of the water, while I stood on a projecting rock, with the two English captains of mines, the three Cornish miners, the assayer, and the surveyor, who were all anxious to witness the passage of the baggage.

'The drove of mules came in sight, one following another; a few were carrying no burdens, but the rest were either mounted, or heavily laden; and as they moved along the crooked path, the difference of color in the animals, the different colors and shapes of the luggage they were carrying, with the picturesque dresses of the peons, who were vociferating the wild song by which they drive on the mules, and the sight of the dangerous path they had to cross, formed altogether a very interesting scene.

'As soon as the leading mule came to the commencement of the pass, he stopped, evidently unwilling to proceed, and of course all the rest stopped also.

'He was the finest mule we had, and on that account had twice as much to carry as any of the others. His load had never been relieved, and it consisted of four portmanteaus, two of which belonged to me, and contained not only a heavy bag of dollars, but papers that were of so much consequence, that I could hardly have continued my journey without them.

'The peons now redoubled their cries; and, leaning over the sides of their mules, and picking up stones, they threw them at the leading mule, who then commenced his journey over the path. With his nose on the ground, literally smelling his way, he walked gently on, often changing the position of his feet, if he found the ground would not bear, until he came to the bad part of the pass, where he again stopped, and I then certainly began to look with great anxiety at my portmanteaus; but the peons again threw stones at him, and he reached me in safety: several others followed. At last a young mule, carrying a portmanteau, with two large sacks of provisions, and many other things, in passing the bad point, struck his load against the rock, which knocked his two hind legs over the precipice, and the loose stones immediately began to roll away from under him; however, his fore legs were still upon the narrow path; he had no room to put his head there, but he placed his nose upon the path to the left, which gave him the appearance of holding on by his mouth. His perilous fate was soon decided by a loose mule that came next, and in walking along the Ladera, knocked his comrade's nose off the path, destroyed his balance, and, head over heels, the poor creature commenced a fall which was quite terrific. With all his baggage firmly lashed to him, he rolled down the steep slope until he came to the point which was perpendicular, and then he seemed to bound off, and turning round in the air, fell into the deep torrent on his back, and upon his baggage, and instantly disappeared. I certainly thought he was killed.

'But up he rose, looking wild and scared, and immediately endeavored to stem the torrent which was foaming about him. It was a noble effort, and for a moment he seemed to succeed, but the eddy caught the great load which was upon his back, and he turned completely over; down went his head with all the baggage, and all I saw were his hind quarters, and his long thin wet tail lashing the waters. As suddenly, however, up his head came again, but he was now weak, and went down the stream, turning round and round by the eddy, until passing the corner of the rock, I lost sight of him. I saw, however, the peons with their lassos in their hands, run down the side of the torrent for some little distance; but they soon stopped, and after looking towards the poor mule for some seconds, their earnest attitude gradually relaxed, and when they walked towards me, I concluded that all was over. I walked up to the peons, and was just going to speak to them, when I saw at a distance, a solitary mule walking towards us.' It was the mule which had fallen from the Ladera, not much injured by his perilous adventure.

*Gustavus.*—I think he must have felt somewhat sore during the rest of the journey.

*Mr. Oakley.*—No doubt he did. I will give you one more of his stories, and then we will take leave of Captain Head. It relates to a contest between one of the Cornish miners who accompanied him and—what do you think he fought with?

*Caroline.*—An Indian, to be sure.

*Mr. O.*—No.

*Gustavus.*—A Guacho?

*Mr. O.*—No.

*Charles.*—A Jaguar?

*Mr. O.*—No. It was a Condor.

*All the children.*—A Condor!

*Gustavus.*—Well, that is the last of all the birds in the air which I should think of attacking. How did the Cornish man come off?

*Mr. O.*—You shall hear. After passing Villa Vicencia, at which they got fresh horses, the Captain saw a number of condors, at a little distance from the road, engaged about the carcass of a dead horse. The Captain contented himself with observing these powerful inhabitants of the desert, and admiring the vast muscular strength which they displayed in rending the flesh of their prey from the bones; but one of his party, who came up after him, being a *Cornish* miner, resolved to have a hug with the winged monarch of the wilderness. Our condor had so gorged himself, that he was able to fly only a short distance. The miner alighted, and getting his knee upon the bird, tried to twist his neck. The labor was difficult, on account of the strength and struggles of the captive, and there was some apprehension that the other condors that were hovering about, might come to the rescue; the miner gained the victory; and then with much pride showed Captain Head the *spolia opima*—the large feathers of the wings which he had borne off in triumph.

*Caroline.*—I should like to hear more about the Condor.

*Gustavus.*—So should I.

*Mr. O.*—I have copied some particulars relating to this bird from a recent work on natural history, and will read them to you.

The Condor has been observed throughout the whole range of that immense chain of mountains which traverses the continent of South America, from the Straits of Magellan to the seventh degree of north latitude. It appears, however, to be much more common in Peru and Chili than in any other part of the chain, and is most frequently met with at an elevation of from ten to fifteen thousand feet above the level of the ocean. Here, in the regions of perpetual snow, they may be seen grouped together to the number of three or four, but never in the large troops in which the true Vultures sometimes assemble, on the bold points of the jutting rocks, many of the most remarkable of which are designated by the natives with names derived from the bird that haunts their pinnacles. It is only when driven by hunger that it descends into the plains, which it quits as soon as its appetite is satiated, unable, as it would seem, to support for any great length of time the increased weight of the atmosphere and the warmer temperature of the lower world.—On such occasions it rarely perches on the branches of the trees, but generally takes up a position on the ground, for resting on which its comparatively straight talons are peculiarly fitted. It is said that the female bird builds no nest, but deposits its eggs upon the bare rock without protection of any kind. These eggs are stated to be perfectly white, and three or four inches in length. The female is also said to remain with her young for a whole year.

The habits of the condor partake of the bold ferocity of the eagle, and of the disgusting filthiness of the vulture. Although, like the latter, it appears to prefer the dead carcass, it frequently makes war upon a living prey; but the gripe of its talons is not sufficiently firm to enable it to carry off its victim through the air. Two of these birds, acting in concert, will frequently attack a Puma, a Lama, a Calf, or even a full grown Cow. They will pursue the poor animal with unwearied pertinacity, lacerating it incessantly with their beaks and talons, until it falls exhausted with fatigue and loss of blood. Then, having first seized upon its tongue, they proceed to tear out its eyes, and commence their feast with these favorite morsels. The intestines form the second course of their banquet, which is usually continued until the birds have gorged themselves so fully as to render themselves incapable of using their wings in flight. The Indians, who are well acquainted with this effect of their voracity, are in the habit of turning it to account for their amusement in the chase. For this purpose, they expose the dead body of a horse or a cow, by which some of the condors, which are generally hovering in the air in search of food, are speedily attracted. As soon as the birds have glutted themselves on the carcass, the Indians make their appearance armed with the lasso, and the condors, being unable to escape by flight, are pursued and caught by means of these singular weapons with the greatest certainty. This sport is a peculiar favorite in the country, where it is held in a degree of estimation second to that of a bull-fight alone.

In tenacity of life the condor exceeds almost every other bird. M. Humboldt relates that during his stay at Riobamba, he was present at some experiments which were made on one by the Indians, who had taken it alive. They first strangled it with a lasso and hanged it on a tree, pulling it forcibly by the feet for several minutes; but scarcely was the lasso removed, when the bird arose and walked about, as though nothing had occurred to affect it. It was then shot with three balls discharged from a pistol at less than four paces, all of which entered its body, and wounded it in the neck, chest, and abdomen: it still, however, kept its legs. Another ball struck its thigh, and it fell to the ground: this was preserved by M. Bondpland for a considerable time as a memorial of the circumstance. Ulloa had previously asserted that in the colder parts of Peru the skin of the condor was so closely covered with feathers, that eight or ten balls might be heard to strike it without penetrating its body. M. Humboldt's bird did not die of its wounds until after an interval of half an hour.

The stories which have long been current, on the authority of credulous travellers, imputing to the condor a propensity to carry off young children, and even to attack men and women, appear to have originated solely in that common feeling which delights in regarding mere possibilities in the light of positive facts. M. Humboldt declares that he never heard of an instance in which a child was carried off, although the children of the Indians who collect the snow on the mountains for sale, are constantly left sleeping in the open air, in the midst of these birds, and offer of course a temptation which would be irresistible, if not counteracted by some peculiar instinct.—With respect to the risk incurred by men, while he confesses that two of these birds would be dangerous enemies for a single man to encounter, he states that he has frequently approached them within ten or twelve feet, as they sat three or four together perched upon the rocks, and that they shewed no disposition to attack him.—The Indians of Quito, moreover, unanimously assured him, that men have nothing to apprehend from the condors.

### MANOMETER.

THE Manometer, or *Manoscope*, is an instrument to shew or measure the alterations in the rarity or density of the air. It differs from the barometer in this, that the latter only serves to measure the weight of the atmosphere, but the former the density of the air in which it is found; which density depends not only on the weight of the atmosphere, but also on the action of heat, cold, &c.

### EFFERVESCENCE

Is the commotion produced in fluids by some part of the mass suddenly taking the elastic form, and escaping in numerous bubbles.

### EFFLORESCENCE

Is the effect which takes place when bodies spontaneously become converted into a dry powder. It is almost always occasioned by the loss of the water of crystallization in saline bodies.

### DELIQUESCENCE,

Is the spontaneous assumption of the fluid state by certain saline substances, when left exposed to the air, in consequence of the water they attract from it.

POPULATION.—The Atlas says, Spain has on an average but 63 individuals to the square mile; Scotland but 71; Denmark but 76; while Massachusetts has 78; Connecticut has 63; Rhode Island 52; New York 44; New Jersey 4; Delaware 38; Pennsylvania 29; New Hampshire 23; Vermont 23; Ohio 23; South Carolina 18; Virginia 17; Tennessee 17; Kentucky 16; North Carolina 15; Maine 12; Indiana 10; Georgia 9; Alabama 6; Louisiana 5; Illinois 3; Mississippi 2; Missouri 2.

ECHOING BODIES.—Echoing bodies may be so contrived and placed, that reflecting the sound from one to the other, a multiple echo, or many echoes, shall arise. At Rosneath, near Glasgow, in Scotland, there is an echo that repeats a tune played with a trumpet three times completely and distinctly. At the sepulchre of Metella, wife of Crassus, there was an echo, which repeated what a man said five times.—Authors mention a tower at Cyzicus, where the echo repeated seven times. There is an echo at Brussels that answers fifteen times. On the banks of the Naha, between Coblentz and Bingen, an echo repeated the words a man uttered 17 times.

# GEOLOGY.

The great simplicity amidst the endless and beautiful variety of nature, bespeaks a divine Author. What careless observer would imagine that all vegetables, from the loftiest oak in the forest, to the most delicate flower in the garden, or the humblest moss by the wayside, were composd of three simple elements? Who would suspect that these three elements, with the addition of one more, form all the animals upon the earth—every fish that swims in the sea, every reptile that creeps in the dust, every bird and insect that flys in the air, and every quadrupid that walks upon the earth? Who would not be interested to know that two of the elements which compose the whole of the animal and vegetable kingdoms, are the only ingredients of all the water upon our globe? And is not the interest still increased, when it is found that the air we breathe is also composed of two of the same four elements? What but infinite power and wisdom, could create from nothing, four simple substances, capable of forming animals, vegetables, the ocean and air, with a large portion of soils, rocks, and minerals upon our globe?

Who can witness without emotion, or without reverence for their Author, the towering mountain, the threatening precipice, and the sparkling crystal? especially when he knows that all their sublimity and beauty, are produced by a few simple substances, which can be learnt in a day or an hour?

What man, what woman, what child, and above all, what christian, can stand, and live and move amidst such works, of such an Author, without a reflection or an inquiry, how those things are so curiously and wonderfully made, and of what elements they are composed?

### ALPHABET OF NATURE.

Oxigen, hydrogen, carbon, and nitrogen, and the metals, constitute so large a part of all material substances, as to deserve the title of the alphabet of nature. Oxigen, which is the most common, and most abundant of the whole, is an air in the atmosphere, a liquid in water and nearly every other fluid substance, and a solid in the numerous salts and the mighty mountain and earthy masses upon our globe.

In the air, oxigen supports life and combustion, carries on fermentation, produces acids, pulverizes soils, forms paints, destroys colors, and performs numerous important services for man, beast, fowl, fish, insect, and reptile. Of water, it forms about seven-eights of its weight, and of course scatters itself over the globe in ocean, brook and vapor.

In solids, it is found in every muscle and vein of animals, in every twig and leaf of the forest, and in every partcle of dust under our feet.

Hydrogen, except oxigen, is the only ingredient of water, enters largely into all animal and vegetable substances, and into some minerals.

Carbon constitutes the most solid and durable material in the animal and vegetable kingdoms, is at all times floating in the atmosphere, and to some extent is bedded deep and firm in the solid rock and the mountain's base.

Nitrogen with oxigen, is the only essential ingredient in the air we breathe, and forms a considerable part of every animal upon the globe.

Metals form a distinct class of bodies, and are simple elements of nature. Iron is more extensively diffused and more important than all the others united. Besides large deposits of it in beds in many places upon the earth, it is diffused in small quantities through mountains and soils, and enters slightly into most other minerals, and even into animals and vegetables. Gold, silver, copper, tin, lead, and several other metals, are simple substances, as no one of them has been found to be composed of more than one element, and therefore deserve a place in an elementary view of science.

### GEOLOGICAL ALPHABET.

Quartz, felspar, mica, hornblende, slate, lime, gypsum, and talc, either separately or combined, form much the greatest part of the rocky and earthy masses upon our globe, and have hence been called the geological alphabet. Chlorite has sometimes been given as one of the letters, but it is neither common, abundant or important.

These eight or nine letters of the geological alphabet, are sometimes called simple minerals, because they are more simple than the rocks, which are formed by several of them united; but they are not simple substances or elements, as each of them is supposed to be composed of oxigen, combined with one or more other substances: frequently a metal or metals.

Quartz ranks first among the letters of the geological alphabet. It is one ingredient in most of the rocks and many other minerals upon our globe, and appears under a great variety of forms and colors. Gun-flint is one species of quartz. Most of the white pebbles upon the banks of rivers and the shores of lakes and the ocean, are quartz. Much the greatest part of sand-banks, is quartz, some of them are pure quartz. The pebbles and masses of rock commonly called flint-stone, are quartz.

Some of the precious minerals, such as jasper, agate, carnelian, chalcedony, opal and amethyst, belong to the family of quartz. It sometimes appears in beautiful clusters of crystals with six regular sides, more transparent than glass, and more beautifully polished than it could be by the hand of man.

It is one ingredient in all soils, and in most rocks. Some ledges and even mountain masses are almost entirely of quartz. In all sandy soils this mineral predominates, and of a sand bank it is almost the only substance.

This mineral, in all its varieties, is so hard as to scratch glass and most other minerals. It is most commonly white, or whitish, but has also every variety of color.

Some specimens have nearly the whiteness of milk, when they are called milk quartz. Other specimens have a delicate red or pink resembling the rose, which are called rose quartz. It is sometimes green, when it is called prase. In jasper it is commonly red. Amethyst is purple quartz. Chalcedony is usually whitish with a pearly lustre, Opal resembles chalcedony, but is still more beautiful. When it appears in a chrystaline form, it is called rock crystal. When the crystals are transparent, it is called limpid quartz. These crystals, though transparent, are sometimes smoky, when they are called smoky quartz.

The common coarse specimens of quartz have almost every shade of color, generally produced by iron, which enters more or less into this and most other minerals.

This mineral is diffused in small masses or grains, through several kind of rocks, so as to form a considerable part of them. It also frequently runs in veins, or runs to a great extent through rocks and ledges, thus forming lines and sections by which they are separated into distinct masses.

Glass of every kind is formed almost entirely of quartz. Beds of sand or masses of rock which are not pure quartz, will form a coarse kind of glass; but the most transparent and finest specimens are formed from specimens of pure quartz, free from every foreign substance. A little potash, soda, or some other alkali is added to cause the quartz to fuze or melt more readily.

The principal ingredient in quartz is silex, which is also a component part of felsper, mica, hornblende and talc. Silex, though more simple than quartz, is not an original element. It is composed, or supposed to be composed, of oxigen and a peculiar metal called silicum, which are the two simple and original elements which compose a very great part of the mineral kingdom.

Most specimens of quartz contain a little oxid of iron, or oxigen combined with another and the most common metal, alumene, which oxigen combined with another metal called alumenum, is also an ingredient of quartz. Crystalized quartz usually contains some water, which is oxigen and hydrogen, which are also combined in all animal and vegetable substances.

Thus it appears that quartz though called a simple mineral, is far from being a simple elementary substance, as it is composed of oxigen separately, though conjointly combined with three different metals, and also with hydrogen, an abundant ingredient in animals and vegetables, and a highly combustable substance.

*Felspar*, next to quartz, is perhaps the most common mineral. It enters largely into many rocks, and of some it constitutes the largest part, and is an essential ingredient in all soils. Several varieties of this mineral are found, but the varieties are small in number when compared with quartz. Felspar frequently resembles quartz, but is a little less hard, though it scratches glass and most other minerals.

The fracture or breakage of felspar, together with its lustre, is its most evident test. It breaks in lamina, or small leaves, something in the form of steps. When held in a strong light, it has a peculiar lustre or glistening, which seen is a very good test.

It is seldom if ever transparent, but is sometimes translucent, and about as much light passes through it as through a fine piece of china or porcelain ware.

Felspar cannot, like quartz, be readily melted into a liquid state, but a high heat will soften it into a kind of enamel.

Of porcelain, or china ware, felspar in some form, is one essential ingredient, but usually requires some quartz for perfecting the manufactory. An excellent kind of felspar for this purpose is found in Delaware, where it is procured for a large and successful manufactory of porcelain in Philadelphia. It is recently much used for artificial teeth.

This mineral, like the preceding, is composed of silex, though in a less proportion, of alumine in a much greater proportion than the other, of oxid of iron, considerable potash, some lime, and occasionally oxid of manganese.

So it appears that this mineral, though called simple, is itself composed of various elements. It contains silex, or oxigen and silicium, alumine, or oxigen and aluminum, lime, or oxigen and calcium, potash, or oxigen and potassium, oxid of iron, or oxigen and iron, and oxid of manganese, or oxigen and manganese; that is, oxigen combined separately with six different metals; and these combinations are again combined to form the mineral under view.

These two minerals, quartz and felspar, are so various, and yet so intimate in their combinations and relations, and together constitute so large a portion of our earthy planet, that they deserve a particular consideration. Three of the most abundant rocks upon our globe, most of our highest mountains, and all productive soils, are composed principally of these two minerals.

Quartz, containing in almost every case more than 90 per cent. of silex, when pulverized, produces a mere sand; felspar, containing 15 or 20 per cent. of alumine, or clay, when decomposed or ground to dust, forms a white clay which, from its use in the manufacture of porcelain, is called porcelain clay.

These two minerals are not only combined in various forms and proportions, but they frequently resemble each other in their external appearance and in their physical characters. They are most commonly both of a light color, frequently nearly white, though the felspar usually has a redish tinge, and is sometimes flesh color. Quartz is frequently transparent, and felspar sometimes translucent; quartz melts without difficulty into a perfect liquid; felspar, although not readily melted, is softened so as to form an enamel resembling the enamel upon teeth, for which it is sometimes used. Quartz is almost the only ingredient in glass; felspar is indispensable in the manufacture of porcelain. Quartz, when pulverized, forms sand, and felspar clay; both united, form a great part of the globe we inhabit.

*Mica*, which is very commonly known by the name of isinglass, is intimately and extensively associated with the two minerals just described, in the formation of rocks and mountains. It is the least abundant of the three, but is very extensively as well as minutely diffused through rocks and soils. It usually occurs in fine scales like spangles but in some of the oldest rocks, is found in large plates, of one or two feet in diameter.

This mineral always occurs in laminae or leaves, and can be split or separated to almost an indefinite degree of thinness. It is usually more or less transparent, is elastic, and so soft as to be readily scratched by the point of a knife.

As mica is less abundant, so it is less useful in the arts than either of the minerals with which it is so extensively and minutely associated. It is however used in some parts of the world as a substitute for glass and to a limited extent for other purposes, such as lanterns, stove doors, &c.

Mica, like quartz and felspar, is composed of silex, alumine, potash, oxides of iron and manganese and water, and hence has oxigen in six different combinations, again united into one homogeneous mass.

As soon as the pupil is able to recognize these three minerals he can examine and understand the ingredients of the most common, the most abundant, and the most important rocks upon the earth. Granite, which is so much used, and recently well understood, at least by numerous pupils in infant and primary schools, is composed entirely of quartz, felspar, and mica. The oldest specimens of this rock, like some others are the coarsest; the three ingredients occuring in large masses—the quartz and felspar are sometimes found in masses weighing tons: the mica in large plates.

On account of the promiscuous manner in which the mica in granite is scattered through the rock it has but little the character of slate, and of course cannot like some other rocks be readily split off in slabs of a uniform thickness, but is broken into regular masses by a continued series of wedges, gradually and uniformly driven into holes previously perforated by the dril.

The coarsest or oldest granite is not the kind used or fitted for purposes of architecture. Masses consisting of very course ingredients, could evidently not be wrought either with convenience or for beauty. The finer grained masses are also the most abundant, and are even among the most common rocks over a great part of the earth. It is so common, and so little known that architects living directly by the side of valuable quarries, or perhaps standing upon them, have frequently been at a great expense in transporting large quantities of an inferior quality. Such is the tribute paid to ignorance.

Gneiss, pronounced nice, and sometimes nese, is little else than slaty granit. It is composed of the three minerals already described, and differs from the rock just mentioned principally in the arrangement of the mica. This ingredient, which has already been said to consist of leaves easily separated, when arranged in one uniform direction in the rock, must give it a slaty structure, and easily divided, or be split into slabs.

As such is the arrangement of the mica gneiss, it gives that rock something of the character of a slate, and hence fits it for numerous purposes in building, such as floors, bridges, sidewalks, cellar walls, underpinning to houses, &c. &c.

Mica slate is intimately and extensively associated with the two rocks just described. Nor does it differ much in its ingredients, being composed of quartz and mica, without the felspar. It splits with smoother surfaces than granite or gneiss, and is hence well fitted and extensively used for sidewalks, bridges, floors, &c. Not uncommonly, the surface though smooth is uneven or undulating, and consequently not well fitted for nice or exact work. It is also much softer than either of the two rocks with which it is associated, and consequently less durable where it is much worn, as in side-walks and floors.

Granite, gneiss, and mica slate, are the oldest, most abundant, and most common rocks upon our globe. They also contain most of the metals and other minerals, and give character to soils and surface of country where they are deposited. These circumstances, relating to the original and treble foundation of our planet, render an acquaintance with these rocks of peculiar interest and importance, to every one who acknowledges a Creator or lives upon his bounties.

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### HUMAN STRUCTURE.

Weak and ignorant as thou art, Oh man! humble as thou oughtest to be, Oh child of the dust! wouldest thou raise thy thoughts to infinite wisdom—wouldest thou see Omnipotence displayed before thee, contemplate thine own frame!

Fearfully and wonderfully art thou made:—Praise therefore thy Creator with awe, and rejoice before him with reverence.

Wherefore of all creatures art thou only erect, but that thou shouldest behold his works! wherefore art thou to behold, but that thou mayest admire them! wherefore to admire, but that thou mayest adore their and thy Creator!

Wherefore is consciousness reposed in thee alone, and whence is it derived to thee?

'T is not in flesh to think—'t is not in bones to reason. The lion knoweth not that worms shall eat him; the ox perceiveth not that he is fed for slaughter.

Something is added to thee unlike to what thou seest; something informs thy clay, higher than all that is the object of thy senses. Behold, what is it?

The body remaineth perfect after this is fled; therefore it is no part of the body. It is immaterial—therefore eternal. It is free to act—therefore accountable for its actions.

Knoweth the ass the use of food, because his teeth mow down the herbage? or standeth the crocodile erect, although his backbone is as straight as thine?

God formed thee as he had formed these; after them all thou wast created: superiority and command were given thee over all; and of his own breath did he communicate to thee thy principle of knowledge.

Know thyself then the pride of his creation—the link uniting divinity and matter. Behold a part of God himself within thee; remember thine own dignity, nor dare to descend unto evil.

Who planted terror in the tail of the serpent? Who clothed the neck of the horse with thunder? Even he who hath instructed thee to crush the one under thy feet, and to tame the other to thy purposes.

### Meeting on Public Schools.

Agreeably to the notice inserted in our last paper a meeting to hear statements respecting the condition of public schools in different parts of the United States, was held in Chatham-street chapel on Tuesday evening. His Honor the Mayor presided at the meeting, supported by the Hon. Peter A. Jay and Judge Irving. An address was delivered by Mr. J. O. Taylor, an agent of the American School Agent Society, established last year in Massachusetts. Mr. T. stated that he had recently travelled through the United States for the purpose of collecting facts on the subject of schools and the state of education, and the following are among the general results of the investigation.

In *New-York*, according to official reports made two years since there were 508,878 children of a proper age to attend school, viz. between 5 and 15, and the number who actually attended was 494, 959.

In *New-Jersey*, according to an official report to the Legislature, there are 11,573 children, who do not attend school; and there are 1,500 adults in that old state who are unable to read. Population in 1830, 318,569.

In *Pennsylvania*, there are 400,000 children, and only 150,000 of them in school, leaving 250,000 without instruction.

*Ohio* has introduced the New-York school system, the best system in the country.

*Indiana* and *Missouri* have no school funds, and have adopted no measures for establishing schools. There are in Indiana more than 22,000 children and 18,000 adults who cannot read. Population of Indiana in 1830, 343,028.

In *Illinois* there are more than 20,000 children and 31,000 adults who cannot read. Population in 1830, 156,608.

In *Kentucky*, according to the statement of President Peers, only about one third of the children were educated in 1833. Population in 1830, 522,704.

In *Tennessee*, only one-quarter of the children are educated. Population in 1830, 540,300.

The meeting was addressed by Col. Stone, R. Fisher, Esq. and other gentlemen, and the following resolutions were unanimously adopted.

*Resolved*, That in the opinion of this meeting the Common Schools of this State are generally deficient in good teachers, and that as unavoidable consequence of this defect, the benefits of which the Common School system is susceptible, are very imperfectly enjoyed by the youth of the State.

*Resolved*, That a committee be appointed to prepare Memorial to the Legislature, praying for the endowment by the State of a central institution for the education of teachers upon a scale co-extensive with the public wants.

*Resolved*, That it be also the duty of said Committe to adopt mensures to procure the co-operation of the people of the other counties, in forwading the object proposed in the preceding resolution.

*Resolved*, That this meeting highly approve of the mensures adopted by the American School Agent Society, and recommend them to the encouragement and support of all those who are friendly to the diffusion of knowledge.

*New-York Observer.*

### Sagacity of Spiders.

While residing on the shore of the Lake of Toun, in the summer of 1828, I was frequently in the habit of spending some hours on the water, in a small boat near a low part of the shore, where there was abundance of reeds growing in the water, and where these reeds gradually become more scattered as the depth of the water increased, until at length they entirely disappeared.

I had frequently had occasion to remark, amongst the thickest crop of reeds, the singular manner in which the tops and stems of the plants were bound together by cobwebs of such strength and elasticity as to resist the action of the most powerful winds. But having observed that even the most distant and completely insolated plants were equally furnished with spiders and cobwebs, it became an interesting inquiry how the communication with these more distant objects was brought about, and what means of escape the little colonists had within their power; as I had never observed an instance of their passing, along the surface of the water.

On taking one of these spiders on my hand I was not long in discovering their mode of operation. For when placed on the point of my finger, in an elevated position, I observed that a fine thread was proceeding in a rapid course from the loom, and was carried by a wind leeward, when it became attached to the first object with which it came in contact; and a communication was thus effected, by means of which the little captive was not long in making his escape.

Having thus discovered their general mode of operation, I had subsequently many opportunities of amusing myself and my friends by more particular remarks and experiments on the powers of these curious insects. I have more than once taken spiders out into the lake, to endeavor to ascertain to what length this projected thread might be extended. In these experiments, tried in situations where a dark shade as a back ground, enabled me to follow the course of the thread with my eye to some distance, it was always carried in about half a minute beyond my powers of vision, or to a distance of about twenty-five or thirty yards; and as no object intervened to which it could become attached, I have reason to think it might extend considerably further. On one occasion, I was enabled distinctly to trace the whole process and the eventual escape of the spider to an object full twenty yards distant. I placed him on my finger, and with a microscope, I observed the valves, in the abdomen to open by distinct appertures, from each of which a fine thread of gummy liquor issued; all of which threads became united into one strong cord, which continued flowing until (carried by a gentle breeze to leeward) it became attached to the branch of a tree, about 20 yards distant.

It was highly interesting to observe the proceedings of the insect during the operation. He had previously, by bringing the lower extremity of his body in contact with my finger, attached the gummy thread firmly to it; and while it was flowing, which was distinctly visible by occasional enlargements in the thread (probably occasioned by dusty particles adhering to it as it flowed) he remained nearly still except when making an occasional trial with one claw, to discover if it was yet fixed to any object.

At length he seemed to have found the desired assistance though I was not then aware of the object to which the line became fixed. But a most singular operation now commenced, and was performed with extraordinary celerity. For by a rapid movement of his hooked claws, he 'hauled in the slack of the rope,' tightening it to the necessary degree; and when he had thus collected a confused mass of tangled thread he swallowed it, and again fixing the tightened end of the cord to my finger, he lost no time in proceeding along the line towards the desired point. I now brought the cobweb in contact with a fixed object, near which I stood, and following the traveller (who was rocked by the breeze in a manner he would not have been if left to his own ingenuity, for in fixing the cord I had not attended with sufficient care to the degree of tightness, to which he had himself arranged it) I saw him reach in safety the branch of a tree, fully twenty yards distant, to which I now found the projected thread had been fixed.—[*London and Edinburgh Philosophical Magazine, and Journal of Science.*

### Happiness of Animals.

It is impossible to view the cheerfulness of animals and birds without pleasure; the latter especially appear to enjoy themselves during the fine weather, in spring and summer, with a degree of hilarity which might be almost envied. It is astonishing how much man might do to to lessen the misery of those creatures, which are either given to him for food or use, or for adding to his pleasure, if he were so disposed. Instead of which he often exercises a degree of wanton tyranny and cruelty over them, which cannot be too much deprecated, and for which no doubt he will be held accountable. Animals are so capable of showing gratitude and affection to those who have been kind to them, that I never see them subjected to ill treatment without feeling the utmost abhorence of those who are inflicting it. I know many persons, who like myself take a pleasure at seeing all the animals around them appear happy. Cows will show their pleasure at seeing those who have been kind to them, by moving their ears gently, and putting out their wet nose. My old horse rests his head on the gate with great complacency, when he sees me coming, expecting to receive an apple or a piece of bread. I should even be sorry to see my poultry and pigs go out of my way with any symptoms of fear. [*Jesse's Gleanings.*

### Meteorological Diary.

*Scottsboro' Institute, Ga., lat. 33° 0' 10", lon. 6° 19".*

| Day & Month. | Thermometer. 8 AM | 2 PM | 6 PM | Winds. | Observations |
|---|---|---|---|---|---|
| JUNE. | | | | | |
| 9 | 74 | 74 | 70 | E | Rain all day. |
| 10 | 69 | 77 | 80 | E to S | Cy.; pleas't. |
| 11 | 72 | 82 | 84 | S | Do. do. |
| 12 | 76 | 86 | 87 | SW | Clear, cy. |
| 13 | 78 | 85 | 85 | SSE | Clear, rainy. |
| 14 | 78 | 85 | 82 | " | Do. do. |
| 15 | 75 | 83 | 84 | SSW | Cy.; pleas't |
| 16 | 82 | 85 | 87 | SW | Pleasant. |
| 17 | 79 | 88 | 84 | NW | Do. |
| 18 | 79 | 90 | 90 | SW | Do. |
| 19 | 86 | 88 | 86 | " | A little rain. |
| 20 | 78 | 84 | 81 | NW | Broken clds. |
| 21 | 74 | 86 | 88 | " | Some rain. |
| 22 | 77 | 85 | 86 | " | Pleasant. |
| 23 | 84 | 94 | 84 | SW to E & NW | Thunder, rn. |
| 24 | 75 | 75 | 76 | NW | Cloudy. |
| 25 | 70 | 76 | 76 | " | Clear. |
| 26 | 82 | 90 | 90 | " | Do. |
| 27 | 82 | 90 | 90 | " | Thunder, rn. |
| 28 | 79 | 90 | 90 | " | Clear. |
| 29 | 84 | 90 | 91 | " | Violent thun. |
| 30 | 79 | 80 | 82 | SW | Some rain. |
| JULY. | | | | | |
| 1 | 76 | 83 | | NE | Cloudy, rn. |
| 2 | | 90 | | SW | Thunder, rn. |
| 3 | | 80 | | " | Cy.; clear. |
| 4 | 70 | | | | Clear. |
| 5 | 78 | | | | Do. |
| 6 | 77 | 90 | | SW | Do. |
| 7 | 75 | 85 | 80 | NNW | Cy.; clear. |
| 8 | 76 | 83 | 84 | SW | Br. clds., rn. |

*Remarks.*

Rust destroyed the wheat crops; other small grain generally good in the up-country. Cotton crops quite promising, though late. Corn crop bids fair to be very fine. Scarlet fever has visited some places, but healthy regions have escaped fatality; up country generally healthy. Heat of the summer days has destroyed the beauty of our garden flowers and shrubs, but field flowers and shrubs on the streams are luxuriant. The vine flourishes in our section; grapes hang in rich clusters. Peaches and other fruit in great plenty, though late.

### Common Schools.

Two books have recently been published relating to the most important and interesting subject of Common Schools, which ought to be read and re-read by every teacher and every parent in the country. The first we mentioned some weeks since: it is entitled, '*The District School as it was.*' Though the description is true to nature, at least to fact, it is a most severe burlesque on the character of many of our schools now in operation.

It is difficult to say for which this book can be most highly recommended, for the instruction or the amusement it must afford to any one and every one who will spend a few leisure moments each day for a week in reading it.

And besides the instruction and amusement it affords, the reader will be very likely to be cured of the dyspepsia if he is troubled with it, by the vigorous and healthful exercise in laughing it must afford; for a person must indeed have most rigid muscles, who can avoid giving free exercise to them during the reading of nearly every page in the book.

Another excellent book for teachers and parents, and especially for school committees, has been given to the public by Wm. A. Alcott, who has produced several other good things for schools.

The book is entitled '*A Word to Teachers, or, Two Days in a Primary School.*' It consists principally of a description of a visit of two days in one of the schools in Hartford, which we know to furnish some of the best examples of good schools which can be found in our country. And we fully agree with the author, that while the Hartford schools furnish excellent examples to be imitated, the Boston Primary Schools furnish good examples to be avoided.

The description given of a school in Hartford, though principally confined to the primary department, and from the visit of two days, is so familiar, and intelligible, and full, as to enable any teacher to understand and imitate the various exercises described. No teacher or parent can read the book without receiving some aid in the management of children.

**Falling Stars**, Humboldt observes, are more common and more luminous in certain regions of the earth than in others. Often they leave behind them a train which remains awhile luminous: at others they seem to burst, and separate into a number of sparks.

### Colonization.

Liberia is becoming one of the most interesting and important places upon the globe.—As a refuge to captive Africans in this country, its prospects are daily brightening; as a bulwark against making new captives of Africans in their own country, it must soon be impregnable; and as a radiating point of the light of science and of the gospel to benighted Africans at their own homes, its hopes and prospects are shining with noonday splendor.

The measures for enlightening and blessing Africa through the medium of Liberia, are becoming completely systematized, and the operations to carry these measures into effect are going on with greatly increased energy.

As a part of the system of measures for civilizing and christianizing degraded Africa, the journals and other publications are important and even indispensable; and it is gratifying to the friends of liberty to know, that some of these publications at least are able and well conducted.

The '**Colonizationist**,' edited by B. B. Thatcher, Esq., and published by Mr. G. W. Light, certainly does credit to the hands, the intellects, and the hearts of both the gentlemen concerned in issuing this Journal of Freedom to the public. The spirit in which the work is conducted is not only manly and dignified, but benevolent and christian, and is among the most able, and worthy, and neatly executed periodicals of this age of magazines.

The Oration of Caleb Cushing, Esq., delivered before the Massachusetts Colonization Society, on the 4th of July last, does credit to the author and his cause. It is a chaste, impartial, able, and republican production, and may be read to advantage, either for the taste, the talents, or the spirit of freedom it everywhere discovers.

### School Agent Society.

Mr. Taylor has just returned from a school agency in the city and state of New York. He has been employed for the society about three months, in which time he has awakened some interest in behalf of schools through a great part of that state, and has secured the confidence, both for himself and the society he represented, of the most intelligent, and of the warmest friends of intelligence of all the places he has visited.

This society holds its annual meeting on Monday next, for the appointment of Officers, and doing other business to advance the interest of schools and the diffusion of knowledge.

### Tallow.

**Tallow** *(Mountain)*. Specimens of this substance were lately found in a bog on the borders of Loch Fyne, in Scotland. This curious mineral was first observed by some peasants on the coast of Finland, in 1736; and it was afterwards found in one of the Swedish lakes. It has the color and feel of tallow; and is tasteless. It melts at 118° F. and boils at 290°. When melted, it is transparent and colorless; on cooling, it becomes opaque and white, though less so than at first. It is insoluble in water, but soluble in hot alcohol, oil of turpentine, olive oil, and naphtha; but precipitates as these liquids cool. Its sp. grav. in the natural state is 0.6078, but it is then full of air bubbles. After fusion, its density is 0.983, which is something above ordinary tallow. It does not combine with alkalis, nor form soap. Thus it differs from every class of bodies known: From the fixed oils, in not saponifying; from the volatile oils and bitumen, in being tasteless and destitute of smell. In volatility and combustibility it resembles naphtha.

**Tallow** *(Piney)*. This is a concrete inflammable substance, obtained by boiling in water the fruit of the *Vateria Indica*, a tree common on the Malabar coast. It partakes of the nature of both wax and oil, and from its appearance may not inaptly be termed a tallow. It is employed in the town of Mangalore as an external application for bruises and rheumatic pains. It melts at 97 1-2° F.; is generally white, sometimes yellow, and is greasy to the touch with some degree of waxiness. Sp. gr. 0.926 at 60°. It is not soluble in alcohol, which takes merely 2 per cent of elain. Fixed alkalis saponify it. It forms excellent candles, coming freely from the mould. Its ultimate constituents are,—

| | | |
|---|---|---|
| Carbon, | 77.0 = | 10 atoms. |
| Hydrogen, | 12.3 = | 9 " |
| Oxigen, | 10.7 = | 1 " |

# BOTANY.

### COFFEE.

'Boiling-hot water extracts from coffee, which has been properly roasted and ground, an aromatic substance of an exquisite flavor, together with a considerable quantity of astringent matter, of a bitter but very agreeable taste; but this aromatic substance, which is supposed to be an oil, is extremely volatile, and is so feebly united to the water that it escapes from it into the air with great facility. If a cup of the very best coffee, prepared in the highest perfection, and boiling hot, be placed on a table, in the middle of a large room, and suffered to cool, it will in cooling fill the room with its fragrance; but the coffee, after having become cold, will be found to have lost a great deal of its flavor. If it be again heated, its taste and flavor will be still further impaired; and after it has been heated and cooled two or three times, it will be found to be quite vapid and disgusting. The fragrance diffused through the air is a sure indication that the coffee has lost some of its most volatile parts; and as that liquor is found to have lost its peculiar flavor, and also its exhilarating quality, there can be no doubt but both these depend on the preservation of those volatile particles which escape into the air with such facility.

'In order that coffee may retain all those aromatic particles which give to that beverage its excellent qualities, nothing more is necessary than to prevent all internal motions among the particles of that liquid; by preventing its being exposed to any change of temperature, either during the time employed in preparing it, or afterwards, till it is served up.

'This may be done by pouring boiling water on the coffee in powder; and surrounding the machine in which the coffee is made, by boiling water: or by the steam of boiling water: for the temperature of boiling water is invariable, (while the pressure of the atmosphere remains the same,) and the temperature of steam is the same as that of the boiling water from which it escapes.

'But the temperature of boiling water is preferable to all others for making coffee, not only on account of its constancy, but also on account of its being most favorable to the extraction of all that is valuable in the roasted grain. I found that coffee infused with boiling water was highly flavored, and better tasted, than when the water used in that process was at a lower temperature.

'As all kinds of agitation must be very detrimental to coffee, not only when made, but also while it is making, it is evident that the method formerly practised, that of putting the ground coffee into a coffee-pot with water, and boiling them together, must be very defective, and must occasion a very great loss. But that is not all; for the coffee which is prepared in that manner can never be good, whatever may be the quantity of ground coffee that is employed. The liquor may no doubt be very bitter, and it commonly is so; and it may possibly contain something that may irritate the nerves,—but the exquisite flavor and exhilarating qualities of good coffee will be wanting.'

'Coffee may easily be too bitter, but it is impossible that it should ever be too fragrant. The very smell of it is reviving, and has often been found to be useful to sick persons, and especially to those who are afflicted with violent head-achs. In short, every thing proves that the volatile, aromatic matter, whatever it may be, that gives flavor to coffee, is what is most valuable in it, and should be preserved with the greatest care, and that, in estimating the strength or richness of that beverage, its fragrance should be much more attended to than either its bitterness or its astringency.

'One pound avoirdupois, of good Mocha coffee, which, when properly roasted and ground, weighs only fourteen ounces, serves for making fifty-six cups full of the very best coffee, in my my opinion, that can be made.

'The quantity of ground coffee which I use for one full cup, is 108 grains troy, which is rather less than a quarter of an ounce. This coffee, when made, would fill a coffee-cup of the common size, quite full; but I use a larger cup, into which the coffee being poured boiling hot, on a sufficient quantity of sugar (half an ounce,) I pour into it about one-third of its volume of good sweet cream, quite cold. On stirring these liquids together, the coffee is suddenly cooled, and in such a manner as not to be exposed to the loss of any considerable portion of its aromatic particles in that process.

In making coffee, several circumstances must be carefully attended to: in the first place, the coffee must be ground fine, otherwise the hot water will not have time to penetrate to the centres of the particles; it will merely soften them at their surfaces, and, passing rapidly between them, will carry away but a small part of those aromatic and astringent substances on which the goodness of the liquor wholly depends. In this case, the grounds of the coffee are more valuable than the insipid wash which has been hurried through them, and afterwards served up under the name of coffee.

'As a gill measure is well known in England, I shall adopt it as a standard measure for a cup of coffee; and as it is inconvenient to fill coffee-cups quite to the brim, I shall propose coffee-cups to be made of the form and dimensions they now commonly have, or of a size proper for containing 8 1-3d cubic inches of liquor, when filled quite full to the brim. I have found by the results of a great number of experiments, that one quarter of an ounce avoirdupois of ground coffee is quite sufficient to make a gill of most excellent coffee, of the highest possible flavor, and quite strong enough to be agreeable.

'Formerly, the ground coffee being put into a coffee-pot, with a sufficient quantity of water, the coffee-pot was put over the fire, and after the water had been made to boil a certain time, the coffee-pot was removed from the fire, and the grounds having had time to settle, or having been fined down with isinglass, the clear liquor was poured off, and immediately served up in cups.

'From the results of several experiments which I made with great care, in order to ascertain what proportion of the aromatic and volatile particles in the coffee escape, and are left in this process, I found reason to conclude, that it amounts to considerably more than half.

'When coffee is made in the most advantageous manner, the ground coffee is pressed down in a cylindrical vessel, which has its bottom pierced with many holes, so as to form a strainer; and a proper quantity of boiling hot water being poured cautiously on this layer of coffee in powder, the water penetrates it by degrees, and after a certain time begins to filter through it. This gradual percolation brings continually a succession of fresh particles of pure water into contact with the ground coffee; and when the last portion of the water has passed through it, every thing capable of being dissolved by the water will be found to be so completely washed out of it, that what remains will be of no kind of value.

'It is however necessary to the complete success of this operation, that the coffee should be ground to a powder sufficiently fine.

'In order that the coffee may be perfectly good, the stratum of ground coffee, on which the boiling water is poured, must be of a certain thickness, and it must be pressed together with a certain degree of force. If it be too thin, or not sufficiently pressed together, the water will pass through it too rapidly; and if the layer of ground coffee be two thick, or if it be too much pressed together, the water will be too long in passing through it, and the taste of the coffee will be injured,'

[*Gallery of Nature and Art.*

### The Horse.

We shall now attempt to point out in what way the horse was brought into the north of Europe. But we shall, in the first place, introduce an interesting observation, made by the Russian Count Rzeiwuski:—'There exists in all indigenous Asiatic horses, under whatever latitude, something peculiar in the expression of their countenance, in their mode of playing their ears, and in all the movements of their body, which evidently shews them to be of one family, and which is to be observed in none of the western horses, with the exception of the English, which have a great deal of Arabian blood. I noticed this in more than 187,000 Asiatic horses, which are brought annually, by the Calmucks and Tartars, to the celebrated fair of Berdyezow. In 1814 there were brought to that place 67,000 horses from the great steppe; and we may safely say, that, during the course of five years' residence in Russian Poland, I must have seen upwards of 240,000 horses of that country.'

The horses of Scythia, from the connexion of the natives with the Sarmatians, and the commerce of the latter with more westerly nations, must have communicated the Scythian blood to the horses in the north of Europe. The improvement of the breed must, however, have been arrested from a combination of causes. Strabo mentions, that a custom existed among the Scythians, of mutilating their horses in order to make them more obedient; and those horses being transported into the low, moist, and rank pastures of Germany, Lithuania, Pomerania, and the northern provinces of France, would naturally degenerate, from the quality of their food; for we find at the present day, that the horses of low and moist countries are of a large and clumsy make. Unless the utmost attention is paid to the grooming, the moisture of the atmosphere, and the bad pasture, soon make an evident impression on the coats of these horses. These causes would soon efface the beauty and qualities of the eastern breed. Horses, however, are less liable to such great changes in the countries lying betwixt southern Poland and the heights of Kiow, from the chain of the Carpathian mountains, along the banks of the Dniester, on account of the pasture being of a superior quality. It is almost certain, that the indigenous breed of all the European varieties of the horse, have been derived from those of Scythia, at a very remote period; and although the latter possess many of the properties, and much general resemblance to the Asiatic race, they are yet greatly inferior in the elegance of their shape.

It would therefore appear, that the state of European horses was wretched, indeed, before the wars of the Greeks and Persians, and the conquest of Spain by the Carthaginians; and we must see, that the communication which Europe had with the south, was of infinitely more advantage, than that which it had with the north, in introducing an improved breed of horses.

Polybius, in describing the passage of the Trebia, in the celebrated victory which Annibal obtained over the Romans, then under the command of the Consul Sempronius, gives an excellent idea of the indifferent state of the horses of that nation: he says, 'Meantime Sempronius sounded the retreat, in order to bring back the cavalry, who were ignorant of the proper mode of conducting themselves to an enemy by which they were fronted. They had, in fact, to deal with the cavalry of Numidia, whose practice it was to retreat in different directions; returning with great vigor to the charge, when their enemy was not expecting it.' The Roman army at that time was principally composed of infantry, and their cavalry was ill mounted, on large and heavy steeds, little calculated to cope with the Numidian cavalry, which could boast of active and lively horses, so that their evolutions were performed with great celerity.

Another strong argument for the inferiority of the European horse in those times may be drawn from the figures in the ancient sculptures; for the bas-relief horses of Marcus Aurelius are very unlike the eastern breed. In times still more modern, we find that the horses of Raphael, Le Brun, and other celebrated painters, are large, heavy steeds, with coarse heads, which must have been characteristic of the horses in their day; whereas, if we look into the figures of coursers given in old Arabian manuscripts, particularly the celebrated 'Manuscripts concerning the arms, evolutions, &c. of the East,' we find the same characteristics which the horses of that country preserve to the present day, although their execution, as works of art, is miserable in the extreme.

In the fourth century, the migration of the Greeks, who entered Europe by the north, and overran it diagonally as far as Spain, spreading their hordes laterally, dispersed hordes of the Asiatic kinds, and thereby improved their breeds. Afterwards the Moors, in the eighth century, brought vast numbers of horses from the East. It was in the year 782 that the Saracens, with a force of two hundred thousand, penetrated into France as far as the walls of Poictiers, the capital of the department La Vienne, where they were totally routed by the army of Charles Martel. In consequence of this event, the French must have possessed themselves of many of the superior horses of that people. It is not improbable, that the English might obtain some of this breed, after the celebrated victory of Edward the Black Prince, son of Edward the Third, on the 15th September, 1354; although of this we have no historical information. Traces of eastern blood are still visible in this part of France—and at Limousin, very fine horses are to be met with, which can only be accounted for, from the dryness of the pasture.

It was the practice of eastern monarchs to send presents of horses to France. In the year 800, Haroun-al-Raschid sent magnificent presents to Charlemagne, and among them some fine coursers. In the tenth century we are informed by Cardonne, in his Histoire de l'Afrique, that the grand vizier, Abd-el-Malek ben Cheid, presented, among other gifts of value, to the Caliph Abdol-Rab-man the third, fifteen Arabian horses of the best blood.

During the Crusades, a considerable communication subsisted between Europe and the East, in which all the princes in Christendom joined. Christian princes swayed the royal sceptres of Jerusalem, Nice, and Cyprus; these were composed of the first nobility of France, Germany, and England, and it is most likely that they would bring in their train the fine eastern coursers to improve the breed of their native lands. Indeed it is hardly possible that they could fail to possess themselves, while it was in their power, of those beautiful animals, which have been so highly valued from the remotest ages.

The celebrated Genghiskan, in the thirteenth century, brought all Asia under his sway. In his conquest, he carried with him the armies of his subjugated states.—This circumstance tended to amalgamate the breeds of India, Persia, and Arabia, which were ultimately scattered over all Asia.

Boton-chan, grandson of Genghiskan, in the year 1211, invested the Crimea, dispersed the Cossack nation, and, crossing the Dnieper with his army, overran Poland, advanced into Silesia, subduing Lublin, Cracow, Lignitz, and Breslaw, penetrated into Hungary, and was on his march to Constantinople, when his ambitious career was terminated by death.

This adventurous invasion was followed by many others, but particularly by one of much importance,—that of the famous Islam Gueray, who, in the year 1649, joined himself with 300,000 Tartars of the Crimea, under their leader Bogdan Schmielnieki. This army invaded Poland; and as these Tartars were in the practice of carrying two horses each with them in their war exploits, many of them must have been thereby left in that country.

From very early times, the Poles seem to have been horsemen; and they have spared no expense in introducing Arabian stallions; and, in their frequent intercourse with Turkey, they must have got many excellent horses from that country. Even in our own times, Prince Sanquizko, of Volognia, sent his equerry, M. Buiski, to Haleb, whence he brought six Arabian stallions of great value. And General Obodynski brought with him, at two different times, from Constantinople, upwards of sixty horses.

Count Rzeiwuski tells us, that the late Emperor Napoleon, during his reign, introduced many Arabian horses into France; that, on one occasion, he saw eighty of them in their progress through Vienna; and that the Limousin is the only country in which the advantages anticipated from them can be realized; for, even to this day, the horses of France are but of little value, being far inferior to our English blood horses.

We are certain that the first Arabian horse brought into England was during the reign of James the First. The great commercial intercourse which has since taken place between the East and Europe, and their frequent wars, have occasioned the introduction of the horses of various countries, which, mingling with our own, have much improved the breed. The southern varieties of the horse, however, have been preserved in their native purity, in Great Britain and Ireland alone.

We have stated, that the country around the Sea of Arel was, in all probability, the primitive abode of the horse. In that district, he is found in a wild state, in large troops, at the present day. Wild horses are also found, in very large herds, in those extensive upland valleys, on the sides of the vast mountain ranges which bound the great valley of Asgar, through which flows the river Indus, namely, the Mus Tag mountains on the east, and the Belur Tag mountains on the west. There are also numerous herds in the valleys amongst the great Kandahar range of mountains; and, according to Braboza, in the mountains of Hyderabad.

In the Charmar mountains, towards the north of China, there are herds of wild horses; but these are inconsiderable in their numbers. Still farther north, amongst the valleys of the Altai range, a vast chain of mountains, rising in about the 68th degree, and terminating at East Cape in the 170th degree of east longitude, and even in their north boundaries, towards Siberia, wild horses are here and there to be met with; but these are of a puny race, with large heads, and ill-formed limbs, very thick about the joints. It is said, that a few straggling individuals have been seen even so far north as the plains in the district of Tungousi.

In the neighborhood of the Cape there are also wild horses, which inhabit the mountain plains of Graaff Reinett. They are very beautiful and lively animals; and, although of small size, are admirably adapted to light draught, or the saddle. The horses of Bornou are also small, but very perfect in their figures. Those of Mandara are, on the contrary, large, powerful, and very beautiful; some are of a bright bay color.

## QUESTIONS

### ON THE LAST NUMBER OF THE LYCEUM.

What society in the Scottsboro' Institute, in Georgia, has set an example worthy to be followed by all the schools in the country?

Which imparts the most real satisfaction to young people, appropriating a part of their resources for the benefit of others, or applying the whole to themselves?

What plant or shrub is described by a member of the Scottsboro' Institute, as fragrant, and peculiar to warm climates?

What class and order does this plant belong to?

Which has the greatest power in producing tides, the sun or moon?

To what height does the cotton plant grow?

What is the mode of preparing the ground for the cotton crop?

To what depth ought the seeds to be covered?

Is it important to keep the cotton field clear of weeds?

In what month do the pods open?

What uses are made of the cotton seeds?

In what month is the cotton seed planted?